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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,679	08/18/2005	Vladimir Cagan	264230US2PCT	9267
22850	7590	02/29/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER	
			CASAREGOLA, LOUIS J	
			ART UNIT	PAPER NUMBER
			3746	
			NOTIFICATION DATE	DELIVERY MODE
			02/29/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
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**Office Action Summary**

Application No.

10/519,679

Applicant(s)

CAGAN ET AL.

Examiner

Louis J. Casaregola

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 11-22 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### ***Species Election***

This application encompasses three different species of the inventive subject matter as represented by the three alternative embodiments shown respectively in Figures 3, 4 and 5. These species constitute patentably distinct inventions (35 USC 121) and lack unity of invention (PCT Rule 13.1) because the species are not so linked as to form a single inventive concept and they lack the same special technical features relating to the arrangement of permanent magnets within a plasma thruster. Applicants are therefore required for a complete response to (1) elect a single disclosed species and (2) list all claims readable on the elected species including any claims subsequently added.

Claim 11 appears to be generic.

Applicants are further advised that a mere argument alleging that a generic claim is allowable will not satisfy a species election requirement. For a complete response, applicants must elect a single species and list the claims readable on that species as set forth above. In the event that a generic claim is allowed, applicants will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of the allowed generic claim as provided by 37 CFR 1.141.

***Claim Rejections - 35 USC 112***

Claims 11-22 are rejected under 35 USC 112, first and second paragraphs, as the claimed invention is not described in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same, and/or for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

The inventive thruster apparatus includes a number of significant elements the locations of which are established relative to so-called "upstream" and "downstream" positions or directions. The terms "upstream" and "downstream", however, are used inconsistently throughout the specification and claims to the extent that these terms have no clear meaning, and accurate claim interpretation is thus rendered impossible.

The paragraph bridging specification pages 1 and 2, for example, defines the upstream to downstream direction as being the direction of arrow "E" in Figure 1. This would establish the top of the Figure 1 apparatus as its upstream end and the bottom of the apparatus as its downstream end. The claims all recite, among other things, an ionization channel (element 3), and describe this channel as being "open at its upstream end" (claim 11, line 4). The only open end of channel 3, however, is shown at the bottom of Figure 1, which according to the specification, is the "downstream" end rather than the "upstream" end as claimed. Either the disclosure has failed to properly define the terms in question (§ 112, first paragraph), or the claims include a significant error

and do not accurately recite the subject matter regarded as the invention (§ 112, second paragraph).

The specification additionally describes element 4 as "upstream plate 4" (page 8, line 16), whereas, the claims appear to describe this element as "a downstream plate" (claim 11, lines 11-12). This causes further confusion about the intended meaning of the terms "upstream " and "downstream".

It is emphasized that the above noted instances of inconsistent language usage are merely exemplary and not exhaustive. To correct this problem, applicants should completely edit the specification and claims to ensure that all terms are used consistently throughout the present application, and to further ensure that the various directions and component locations recited in the claims match those in the illustrated embodiments of the invention.

### ***References***

Egorov et al, Aston, Yashnov et al, and Valentian are cited as disclosing pertinent examples of prior art plasma thrusters including permanent magnets. Due to the indefinite nature of the claimed subject matter, however, a proper comparison between the claims and the reference material cannot be made at this time.

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L. J. Casaregola

571-272-4826 (M-F; 7:30-4:00)

571-273-8300 FAX

February 25, 2008

If repeated attempts to reach the examiner by telephone are unsuccessful, the art unit supervisor, Devon Kramer, can be reached at 571-272-7118.

Information regarding the status of this application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, and status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).